Image/Video Processing

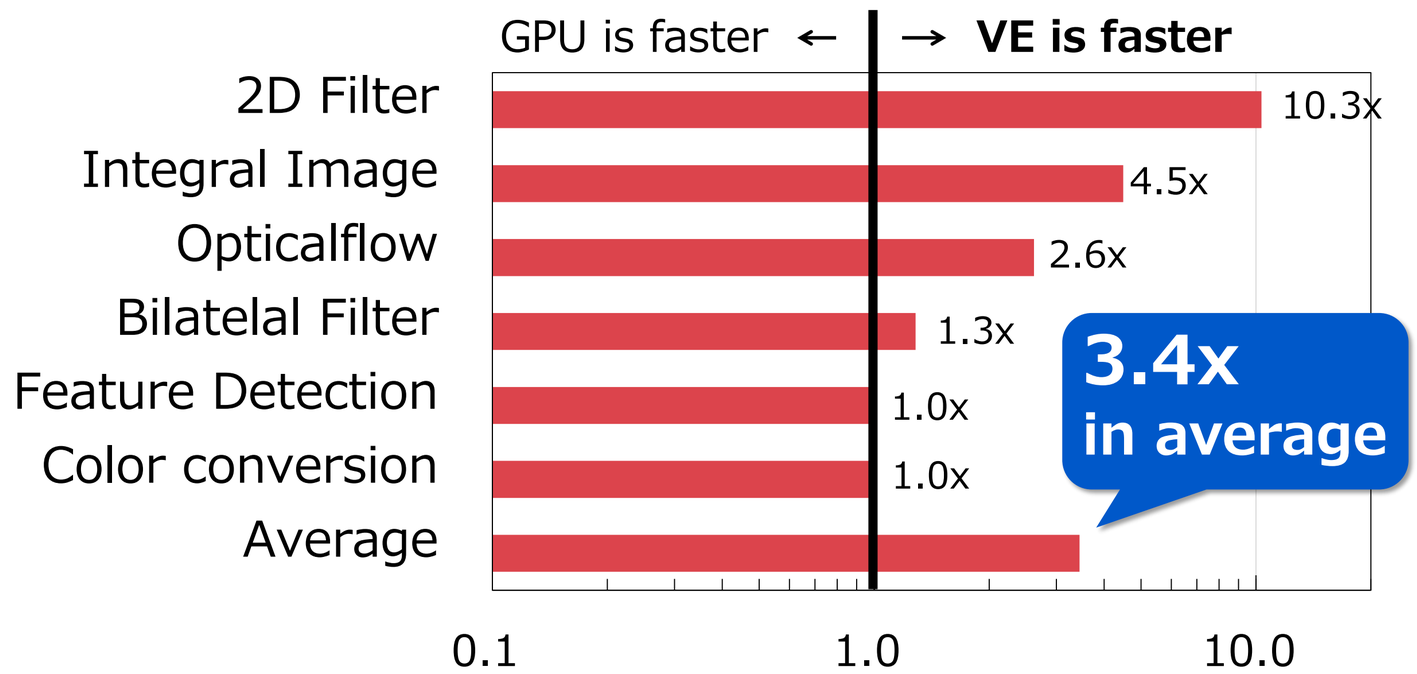
SX-Aurora TSUBASA's Vector Engine is 3.4 times faster than GPU in average of six image processing kernels

Performance of Image Processing Kernels

Six kernels from OpenCV
that are widely used in image analytic applications are evaluated.

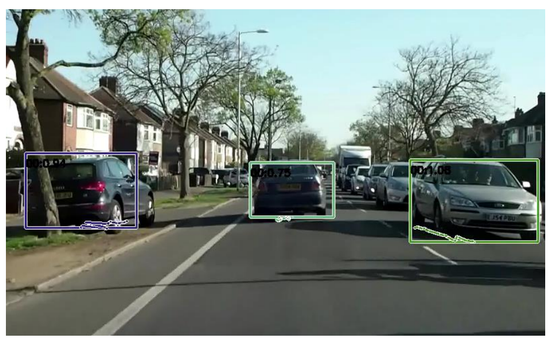
Memory-intensive kernels
shows better speedup vs GPU.

Easy to run OpenCV on VE
because VE supports C/C++ and native execution model (no special language and offload required)

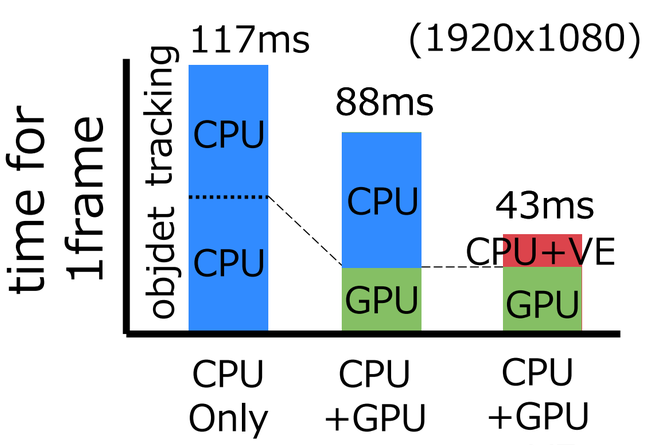


Application Examples (Demos)

Object detection and tracking



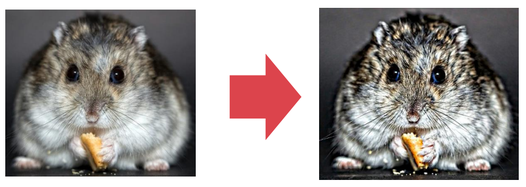
ObjDet: Yolo2
Tracking: Opticalflow-based algorithm



GPU: Quadro P2000
VE: Type 10B

Image Enhancement & Retinex

Image Enhancement



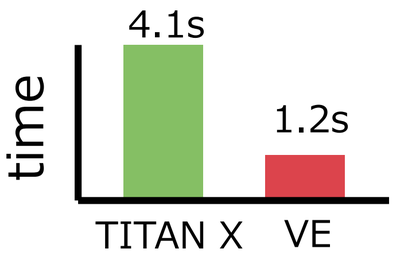


Image size: 960x693 (Processing time for 80 images)

Retinex

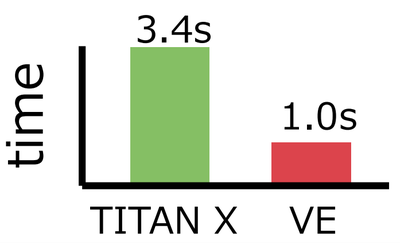
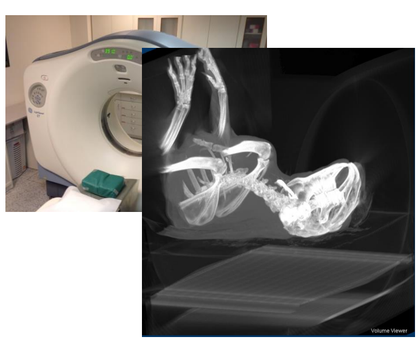
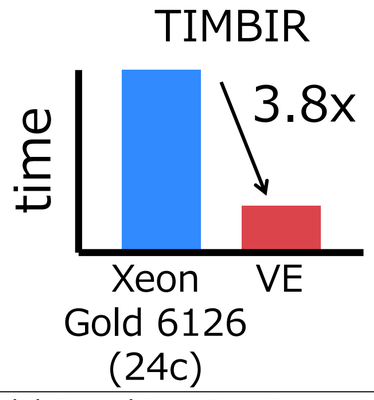
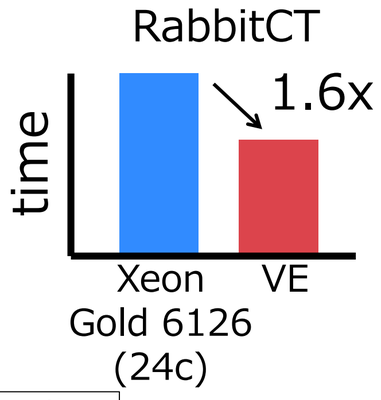


Image size: 960x640 (Processing time for 80 images)

CT Image Reconstruction (TIMBIR[1], RabbitCT[2])







[1] TIMBIR : Time Interlaced Model-Based Iterative Reconstruction
https://engineering.purdue.edu/~bouman/OpenMBIR/timbir/index.html
[2] RabbitCT, https://www5.cs.fau.de/research/former-projects/rabbitct/

Denoise (bilateral filter)